

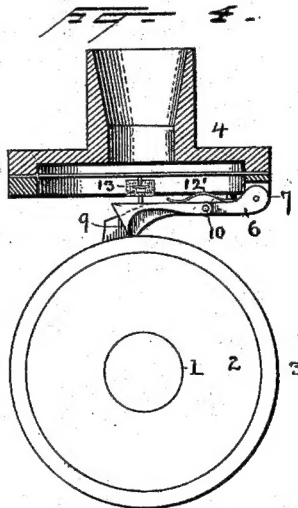
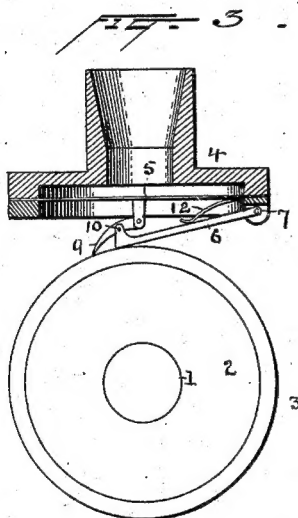
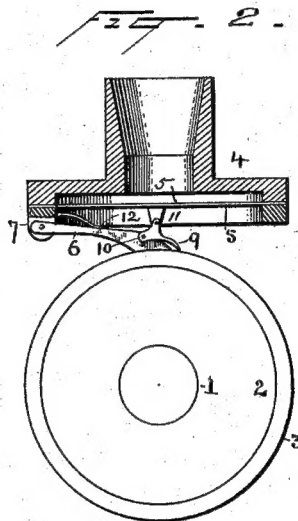
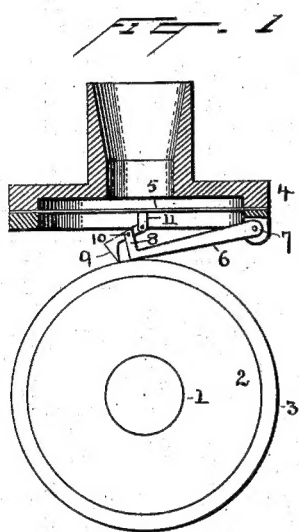
(No Model.)

2 Sheets—Sheet 1.

T. A. EDISON.
PHONOGRAPH.

No. 541,923.

Patented July 2, 1895.



Witnesses
Morris A. Clark.
Nicholas F. Oberly.

Inventor
T. A. Edison.
By his Attorneys
Lyert & Seely.

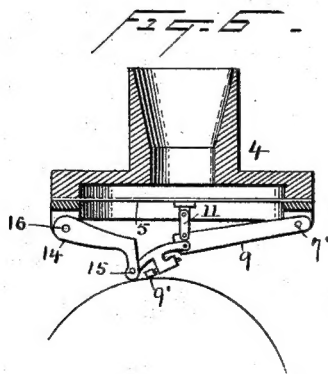
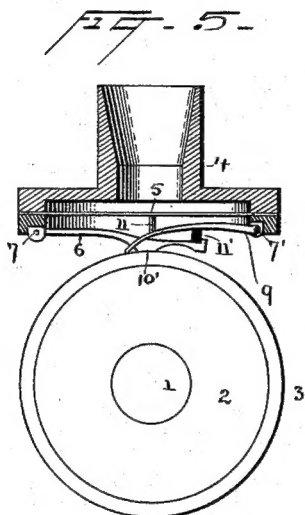
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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 541,923, dated July 2, 1895.

Application filed November 21, 1890. Serial No. 372,223. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographs, (Case No. 879,) of which the following is a specification:

My invention relates to the recording and reproducing devices of phonographs; and my object is, to enable such devices to work satisfactorily notwithstanding irregularities in the surface of the phonogram blank or recording surface. Sometimes in the manufacture of phonogram blanks, irregularities or eccentricities occur in the formation of the surface, and sometimes the blanks become warped after manufacture, and if provision is not made to prevent it, such irregularities will occasion movements of the recording or reproducing point and the diaphragm which will interfere with the recording or reproducing of the sound. This is obviated by the apparatus hereinafter described and which constitutes the present invention. The apparatus is provided with a presser foot adapted to ride on the surface of the phonogram blank, to which presser foot the operating point (recorder or reproducer) is pivoted or operatively connected.

In the accompanying drawings which illustrate my invention, Figure 1 shows a cross-section of a recorder embodying the improvement. Figs. 2, 3, 4, 5 and 6 are views of modified forms of recorders.

The means for turning the phonogram blank, and for moving the recorder along the phonogram blank are not shown, since they may be of any well known or suitable construction, and are not specifically claimed herein.

It will be understood that a reproducer embodying the present improvement might differ from the recorders illustrated in the shape or size of the operating point.

In the several views, 1 indicates the phonograph shaft, 2 the phonograph cylinder, and 3 the phonogram blank.

4 is a support for the diaphragm 5 and is provided with a mouth piece, or means for connecting a speaking tube.

In Fig. 1, 6 is an arm pivoted at 7, and hav-

ing an angle extension 8. The angle of this lever is adapted to ride on the phonogram blank, as shown, and constitutes the presser foot. The operating point or tool 9 is connected to said angle extension as indicated at 10, and is operatively connected with the diaphragm, at or near its center, at 11, by means of a pivotal or yielding connection.

In Fig. 2, the lever 6 is pivoted as above described, and its free end rides on the phonogram blank. The operating point or tool 9 is pivoted to the presser foot or lever 6 at 10, and is connected to the diaphragm at 11. 12 is a spring pressing lightly against the arm 6.

Fig. 3 is substantially like Fig. 1, except that the form of the presser foot and of the operating point is slightly varied, and this needs no further description, the parts being lettered to correspond with the figures already described.

In Fig. 4, the arm 6, which constitutes the presser foot, is provided with a larger bearing surface than the forms heretofore described. The operating point is pivoted thereto at 10, and is pressed lightly toward the blank by a spring 12', as clearly shown. In this form of apparatus the operating point is not connected directly to the diaphragm, but is connected by means of a dash-pot 13, or other suitable retarding device.

Referring now to Fig. 5, 9 is the operating point or tool (recorder or reproducer) pivoted, in this instance, at or near the edge of the diaphragm at 7'. 11 is a rod or post connecting the recorder or reproducer with the diaphragm, preferably at its center. 6 is a pivoted arm having a surface 10' adapted to ride on the face of the phonogram blank and constitutes the presser foot. Between this arm and the recorder or reproducer is a block or piece, 11', of elastic or yielding material, preferably rubber.

In Fig. 6, 9 is the recorder or reproducer carrying arm pivoted at one side of the diaphragm as shown at 7' and provided with the recorder or reproducer 9'. 14 is an arm connected with the diaphragm supporting ring and terminating adjacent to the phonogram blank as shown. The arm 9 is connected with arm 14 at 15. Said arm 9 is also connected to the diaphragm, preferably by a link 11 by means of which vibrations are transmitted

from the diaphragm to the recorder. As the phonogram blank revolves and eccentricities or irregularities pass under the lower end of arm 14, said arm acts as a presser foot as will be evident.

The presser foot, connected to the operating point as set forth, causes said point to operate substantially independent of eccentricities or irregularities in the surface of the phonogram blank, since when such irregularities pass under and vary the position of the presser foot they simultaneously vary the position of the operating point, as will be evident without further description. The form shown in Fig. 4 has a double provision for obviating the effects of irregularities in the blank, viz: the presser foot and the dash-pot connection with the diaphragm, which connection transmits the rapid vibration due to the sound waves or the sound record but yields to the slower and larger movements due to irregularities in the blank.

Having thus described my invention, what I claim is—

1. The combination of a phonograph diaphragm or vibrating body, a pivoted recorder or reproducer operatively connected to the diaphragm, a presser foot, and a connection between the presser foot and the recorder or reproducer, substantially as described.

2. The combination, in a phonograph, of a diaphragm or vibrating body suitably supported, a phonogram blank or recording surface, a presser foot adapted to bear on said blank, and an operating point pivotally connected to said presser foot and operatively connected to the diaphragm, substantially as described.

3. The combination, in a phonograph, of a diaphragm suitably supported, a phonogram blank or recording surface, a presser foot pivoted to a support and having a bearing on the phonogram blank, and a yielding connection between the operating point and the diaphragm, substantially as described.

4. The combination, of a diaphragm suitably supported, a phonogram blank or recording surface, a presser foot pivoted to a support and having a bearing on the phonogram blank, an operating point, and a retarding device between the diaphragm and operating point, substantially as described.

5. The combination of a phonograph diaphragm, a phonogram blank, a presser foot adapted to rest thereon, a recorder or reproducer pivoted to the presser foot and tending to move toward the blank, and a dash-pot, one member of which is connected to the diaphragm, and one member of which is connected to the recorder or reproducer, substantially as described.

6. The combination with a phonograph diaphragm, a recorder or reproducer operatively connected to the diaphragm, a presser foot, and an elastic or yielding block between the presser foot and the recorder or reproducer, substantially as described.

7. The combination of a phonograph diaphragm, a recorder or reproducer operatively connected to the diaphragm, a presser foot, and a block carried by the presser foot and bearing against the recorder or reproducer, substantially as described.

8. The combination of a phonograph diaphragm, a phonogram blank, a pivoted recorder or reproducer, an operating connection between the diaphragm and recorder or reproducer, and a pivoted presser foot adapted to rest on the phonogram blank, and a block between the recorder or reproducer, and the presser foot adapted to communicate motion from one to the other, substantially as described.

9. The combination, in a phonograph having a phonogram blank, with a phonograph diaphragm, of a presser foot connected to said diaphragm and resting on the surface of the phonogram blank, a recorder, and a recorder carrying arm one end of which is pivoted and one end of which is connected to said presser foot, substantially as described.

10. The combination of a phonograph diaphragm and support pivoted on one side, the presser foot extending from the opposite side, a recorder or reproducer connected to said presser foot and to the diaphragm, substantially as described.

This specification signed and witnessed this 27th day of October, 1890.

THOS. A. EDISON.

Witnesses:

CHARLES M. CATLIN,
RICH. N. DYER.